N.S.W. DIVISION ISSUE

AMATEUR RADIO

WIRELESS RESERVE AUSTRALIAN AIR FORCE

Published in the Interests of the Wireless Institute of Australia, Official Organ of all divisions of the W.I.A. and R.A.A.F.W.R.

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INDEX

Editorial 3
Thyratons at Work 4
The W8JK Beam—and Variations 10
Q.S.L. Bureau 18
VK2HF 19
Air Raider's Column 21
28 and 56 M.C. Notes 22
DX Notes 23
Divisional Notes—
N.S.W. Division 24
Victorian Division 27
Queensland Division 30
South Australian Division 31
Tasmanian Division 32

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Editorial . .

THE NEW SOUTH WALES DIVISION

It has been suggested that a resume of the organisation of this Division, because of some of its unusual features, would be of interest to members of the Institute in the other Divisions.

The internal organisation, such as membership, meetings, voting, committees, their power and control, is very much the same as that of the other Divisions. The interest lies in the arrangements made for giving service to members.

The State of N.S.W. is divided territorially into six zones outside the metropolitan area, in each of which is appointed an officer, whose duties comprise the distribution of information forwarded through the Council, the collection of news and material for the notes published in this and other magazines. His special duty is to look after the welfare of the members residing within his territory. He enjoys the privileges of a Council member and receives each month a copy of the minutes of meetings. He is expected to preserve the same attitude as a member of the Council and generally to administer his Zone.

Country members have various benefits to compensate them for the lack of opportunity of association and attendance at monthly meetings enjoyed by the metropolitan members. A country member pays only half the subscription of a full city member, and is forwarded a copy of "Amateur Radio" each month, together with a Bulletin issued by the Publicity Officer under direction of the Council.

The QSL service in N.S.W. is open to both members and non-members, the only distinction being that a non-member is asked to forward a stamped addressed envelope each month for the return of his cards. All outwards cards are handled at one half-penny each, the service for inwards cards being free to all. During the year ended February, the QSL Officer (VK2YC) handled over eleven thousand cards for the hams of N.S.W.

Another feature of the distribution of membership of the N.S.W. Division is the affiliation of Radio Clubs. In the principal cities of the State public spirited hams have banded together for the instruction of those striving to obtain their A.O.C.P. This movement has developed to such an extent that in the metropolitan area of Sydney there are no less than eight clubs whose aggregate membership exceeds 250. The constitution of the Division provides for the affiliation of these clubs as single members. All rights and privileges attendant on membership of the Division are extended to the members of affiliated Clubs except that only one representative of each club has a vote at meetings. The QSL service is at the disposal of each member of the club, the same as if he were a member of the Institute.

It is at all times the earnest endeavour of the Institute in this State to work in harmony with organisations having similar objects, with public bodies and the Government.

As evidence of the friendly relations existing between the Crown and Institute, the N.S.W. 150th Anniversary Celebrations Committee accepted as part of its official programme the 14th Annual Convention of the Institute held in Sydney during Easter of this year, and further showed its appreciation of the work of the Amateurs by making a contribution of £100 towards the running of the VK-ZL DX Contest in October of this year. This event is also one of the official functions of the celebrations in connection with the 150th anniversary of the founding of Australia.

Thyratons at Work

By M. M. Lusby, B.Sc., B.E. (VK2WN).

What is a "Thyratron"? Well, maybe it's only a name, but to you and I it's just a plain old triode into which some chap has introduced some mercury vapour. The presence of this vapour has enabled it do do new things and the purpose of this article is to suggest a few things which the up-to-date experimenter may like to dabble with. Strictly speaking, we should refer to this tube as a Gas-Flled Relay Tube, or, more briefly, as a gas triode, since the name "Thyratron" is a registered name of the General Electric Co.

"How exactly does the presence of mercury vapour affect the operation of the triode?" you may ask. Well, looking for the moment at the inside of a normal triode, we see that there is a large voltage drop between plate and cathode; this means a large resistance somehow, but how can just so much vacuum have a resistance?

The answer is simply that there is not a complete vacuum, but actually, negatively charged electrons are present, flowing to the anode from the cathode, under the electrostatic attraction of the former. All electrons are negative, therefore they repel each other individually. This means that there is resistance to free flow by virtue of the opposing forces due to this repulsion. The result is a space cloud of electrons accumulating at the region where the repulsion of the cathode equals the resultant repulsion of the combined effects of the electrons on their way to the plate, the grid and the anode.

It is this resistance which constitutes the triode's internal resistance and has the effect of limiting the anode current and setting up a fairly large potential difference between anode and cathode.

Now let us introduce some mercury vapour into the envelope and observe the effect. Electrons are still emitted freely from the cathode, and proceed towards the anode in the normal way, picking up speed as they go. They now have to thread their way through the gas molecules and numerous collisions are sure to take place. When the electrons have acquired a certain critical speed, they split up the gas molecules into positive parts (protons) and negative parts (electrons).

The protons thus released move towards the cathode and have the effect of neutralising the negative space cloud, thus removing the chief obstacle in the path of the electrons.

The critical speed referred to above is equal to the speed acquired by an electron in traversing a voltage difference of 15 volts. Once its speed has passed this value it has sufficient energy to dissociate a molecule of gas and in so doing it loses this energy and starts off from rest practically. While the whole process is too complex to be stated in simple language, the result is that the potential drop over the whole distance from cathode to plate cannot exceed this critical 15 volts.

In the above description, no account has been given of the part played by the grid; in fact it was tacitly assumed that it had no effect during the discharge. That this statement is indeed true, will now be shown.

Consider a tube which has its grid biassed highly negative before the plate volts are switched on. The repulsion, by the negative charge on the grid, acting on the electrons emitted from the cathode, will be too great to permit them to make the journey to the plate. As the negative bias is lowered, a critical value is reached at which the attraction of the plate overcomes the repulsion of the grid and discharge follows. Once the discharge has started, the only way to stop it is to reduce the anode volts to below 15 volts. It follows, therefore, that after discharge, the

grid exerts no further control until discharge has ceased, when it determines the plate potential at which discharge will again commence.

The ratio of the positive anode volts to negative grid volts at which discharge will just commence, is a constant for a particular tube and is generally called the "Grid Control Ratio." The value of this ratio in the case of the R.C.A. 885 is ten, an easy figure to remember.

All very interesting, maybe, but you want to know where it gets us? Well, let's consider what special features are provided by the inclusion of gas in a triode.

To sum up, we have a tube which, when in use, has an internal voltage drop of only 15 volts, we have, in the control grid, a very flexible adjustment of striking voltage and moreover, we have a small tube which is capable of passing a phenomenally high peak current, and also a high mean continuous current.

Thyratrons have found their way into many corners of industry; they are used for anything from the control of electrical power stations, to the counting of beans—because they provide for split hair accuracy and consistency in processes which were formerly at the mercy of the "Human Element."

In a general discussion such as this, it is impractical to consider in any detail many of the industrial applications of this remarkable little tube. Instead, we will look at one or two developments which may well be used to improve the performance of any Ham station.

For our purposes we may consider the applications of the tube under two headings:—

(a) Voltage and current supply and control.

(b) C.W. keying control.

Under the first heading we must consider such devices as saw tooth wave generators (time-bases), voltage and current protection circuits, and power rectifiers.

The majority of experimenters are already familiar with the application of these tubes to time-bases, as used with cathode-ray oscillographs and since these circuits cover a large field, much of which has been treated by literature made available to them, it is not considered justifiable to dwell on them here. We will merely note in passing, that the saw-tooth wave is built up by the combined effects of the steady charging of a condenser, and the rapid discharge by the gas relay tube, when the common voltage on the condenser and anode causes the tube to strike up.

Voltage protection is a precaution which we often overlook—much to our annoyance when the new bottle goes into a power dive or the pet filter condenser starts to bake! The Gas-Relay tube offers a simple solution to this problem as instanced by the circuit shown in fig. 1. This arrangement suggests a method of using a gas-triode for protecting a high-voltage power pack.

The tube is shown with a relay, R, in the plate circuit, which is supplied with A.C. from the transformer T. An indicating lamp is included in the plate circuit also to show when the tube is discharging. The

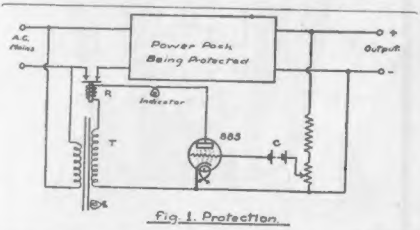

Fig. 1. Protection.

grid bias is supplied from two sources acting in opposition. The battery C supplies a steady D.C. negative bias while a small positive voltage is obtained by tapping the output of the pack being protected.

Output surges may be due to either of two sources; firstly, due to internal causes such as shorting of turns on the choke coil or transformer primary; secondly, due to line voltage surges. We will see how our device can take care of each of these emergencies.

A few figures will help; suppose the r.m.s. volts on the plate to be 60, this corresponds to a peak voltage of 85. Hence the tube will strike up on the peak of the cycle, if the bias is -8.5 volts or less. We therefore bias it, say, -9 volts and the tube will not normally strike up, even on peaks of plate voltage. However, if the output voltage of

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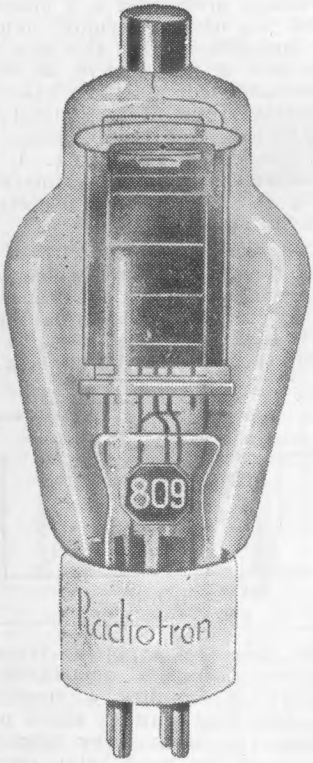

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the power pack rises, due to the first cause mentioned above, the nett voltage on the grid will become more positive, causing the tube to strike up, and the current so produced will pull the relay R out and cause the indicating lamp to flash on. Again, if the mains voltage surges, due to the second cause, the peak voltage on the tube will rise proportionately and cause the tube to strike up and isolate the power pack. At the end

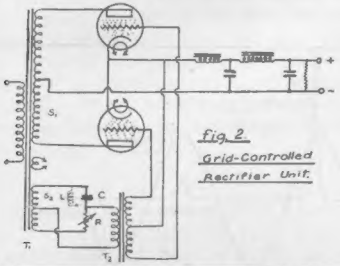
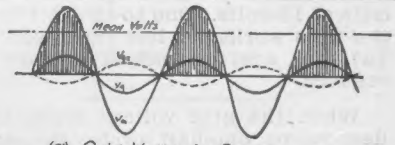


Fig. 2.
Grid-Controlled Rectifier Unit.

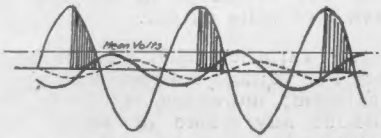
of the positive half-cycle, the anode voltage drops below the minimum of 15 and the tube extinguishes itself. The relay R may, or may not, close again, depending upon whether or not it has a spring-loaded armature. If protection against momentary surges only is necessary, a spring loaded relay could be used as it would continue to open and close until the fault had cleared, after which normal operation would take place. However, as we are more generally concerned about sustained voltage surges it would be preferable to have a relay which would come out and stay out.

Passing to a further aspect of voltage control, there is a very useful application of these tubes as full-wave grid controlled rectifiers. It is possible to construct a power pack using two tubes which can be provided with a very sensitive control on output voltage. The circuit is that shown in fig. 2. You will notice that the anode circuit is that of the conventional full-wave rectifier.

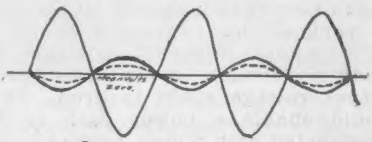
However, the introduction of control grids has led to the development of the arrangement shown. This provides for the supply of two 50 cycle signals on the grids, equal in magnitude ,but opposite in phase. These signals come from the transformer T2, whose primary is supplied from an auxiliary secondary winding S2 of the power transformer T1. This secondary, together with the resistance and condenser shown (R & C), connected in the manner shown, constitutes a phase-shifting device whereby variation of R causes the voltage on the primary of T2 to be shifted in phase with respect to those voltages across the various windings of T1. Since the primary voltage may have its phase shifted thus, it follows that the secondary voltage, and therefore the voltages on the grids of the rectifiers, are shifted with respect to the voltages across the windings of T1. One of these windings supplies the plates of the rectifiers; therefore, variation of R causes the grid voltages to vary in phase with respect to the plate voltages. With the arrangement shown, the maximum variation is 90 degrees, i.e., one-quarter of a cycle.



(a) Grid Volts in Phase



(b) Grid Volts Leading about 90°



(c) Grid Volts 180° out of phase

Fig. 3.

It is possible to obtain 180 degrees if necessary, by the use of an inductance in place of the condenser C.

The manner in which this resistance is effective is best seen by reference to the curves of fig. 3. Here we see conditions applying to one of

the tubes when the resistance is a) Zero, b) At an intermediate value and c) At a value equal to zero, and with an inductance in place of the condenser C. These produce, respectively, an in-phase voltage, a voltage of intermediate phase displacement and a voltage which leads 180 degrees.

When the voltage is in phase with the anode voltage, the grid bias is positive and therefore the tube strikes up as soon as the anode voltage exceeds 15 volts. The rectifier is conducting for almost the entire positive portion of the cycle and we get the full voltage output.

When the grid is made to lead an intermediate distance, the tube will not conduct until the grid voltage rises above the critical range, shown dotted. As soon as this happens, discharge commences and continues until the anode voltage drops below the critical 15 volts. Due to the fact that the tube works for less time than in (a), the average output voltage is reduced.

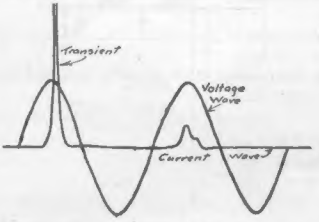
When the grid voltage leads 180 degrees or one-half cycle, the grid voltage never rises above the critical value and therefore in (c) the tube does not discharge at all and we have zero volts output.

This variation of R enables us to vary our voltage between zero and a maximum; moreover, it effects this without any waste of power—the rectifiers only supply what power is needed and have a spell for the rest of the time.

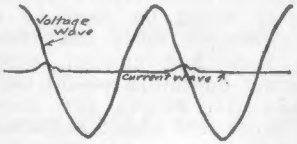
Before leaving this, it is interesting to note that it should be possible to replace the resistance R by a valve whose internal resistance is made to decrease as the power pack output voltage tends to drop. This would enable a power pack to be constructed with almost perfect regulation. We hand it over to you to nut out a suitable bias arrangement for the regulator tube; if this bias is linked with the output voltage, the internal resistance will certainly vary with the load.

A well regulated power pack would solve many difficulties of the phone man and also it would remove the last chirp or surge from the C.W. transmitter.

The greatest difficulty of the C.W. man, however, is that of correcting for key-clicks. We are more directly concerned with our immediate neighbours than with the fellow say, ten miles away. We may well turn to the gas-triode for assistance, not just for correction but for elimination right at the source. Key filters are suitable for damping the clicks out of the transmitted signal and therefore take care of the fellow ten miles away, but they are not always effective in eliminating the QRM which flies back along the mains to neighbouring receivers.



(a) Circuit Closed at Maximum of Current cycle. Bad Transient



(b) Circuit Closed at Minimum of Current Cycle. No transient

Figure 4.

Key clicks are transient in character, i.e., they are composed of a very wide range of frequencies from low to very high. When we close the key, there is a transition from no current to a considerable current and this produces a steep fronted wave which travells unhindered through normal filter chokes and transformers, the capacity of the windings offering a short-circuit path to the high-frequency components. It is this wave which causes the trouble with the neighbours and to which we have devoted some considerable thought.

Some research work done recently at Sydney University by I. D. Cuffe (VK2XC), J. Knight (VK2TB) and W. K. Clothier in connection with transient effects on transformer primaries suggested to us the possibility of keying a transmitter in such a way that the key always closes as the A.C. current cycle passes through zero.

The diagrams of fig. 4 are taken off photographs by 2TB, who used two R.C.A. 885's to close the circuit at any part of the cycle desired, and photographed the current and voltage waves simultaneously off the screen of a cathode-ray oscillograph, using Mr. Clothier's High-Frequency Electron Switch to superimpose the two curves.

In (a) we see the circuit closed as the voltage wave passes through zero. Since the current lags a quarter cycle behind the voltage, in the case of an inductive load, it must be at its maximum as the circuit closes; this produces the transient seen shooting out of the picture.

In (b) the circuit is closed as the voltage passes through a maximum and the current is then momentarily zero. No transient is produced, and we have the ideal condition.

We have developed one or two circuits from Mr. Knight's system, which we think will be suitable for the keying of a radio transmitter. As some practical tests still remain to be carried out it is not considered opportune to publish the circuits at present, but if the result turns out as we hope, you will hear more about it.

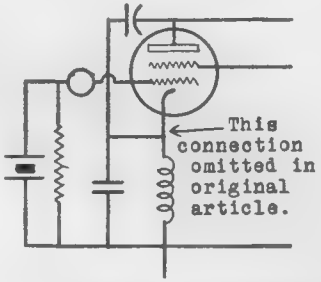
Well, that's the story of the Thyratron as far as we can go at present and the writer trusts that he has been successful in stimulating some interest in the new field of gas-relay control. Here's hoping that this interest will turn into activity in the near future, so trot out your bright ideas!

Harmonics

VK5YL, in a recent QSO with VK2DQ had her pencil run hot and burn her fingers! If you don't believe it ask Betty to post you the pencil.

VK4WX's name is T. E. Ham!

Putting the DC Mains to Work



-Putting the D.C mains to work-
Correction by VK4LK.

VK4LK has pointed out an omission in the circuit diagram of his DC Mains transmitter published in the April issue. A correction is shown above.—Tech Ed.

Field Day at Wyong N.S.W.

A snap of some of the VK2's and Convention Delegates taken at the N.S.W. Division Field Day at Wyong.

SPECIAL NOTIFICATION.

The publishers wish to notify readers and advertisers that the July issue of "Amateur Radio" is to be in the form of a SPECIAL VICTORIAN DIVISION ISSUE. Considerably enlarged and containing many new features of interest, it should commend itself to all those desirous of assisting by advertising and other support.

The W8JK Beam — and Variations

(By Peter H. Adams, VK2JX.)

The W8JK or "Flat Top" beam has been covered rather fully in articles by Johnny Kraus himself, and probably most readers are familiar with this type of antenna. However, it is the purpose of this article to deal with some aspects of this aerial which may not be common knowledge and also to describe a variation of the W8JK beam which has four or more lobes instead of the usual two. This latter type cannot strictly be called a beam but it is an antenna which is especially suitable for use in Australia. The reason for this will be obvious later.

First let us discuss the W8JK beam in its original form. This consists of four half wave doublets arranged as shown in Fig. 1. The feeders are attached at points xx and it will be seen that the currents flowing in the antenna at a given instant will be as shown by the arrows in the diagram; that is, there are two half waves in phase along one side, and along the other side there are two half waves, 180 degrees out of phase with the first two, but in phase with each other. Expressed in another way, the Kraus beam consists of two half waves in phase spaced one eighth wavelength from two half waves in phase acting as a driven reflector. Now since each side acts as a driven reflector for the other the array is bi-directional.

M. A. Brown, in a paper read before the I.R.E. of America, showed that a reflector placed behind a radiator increased the field strength in the desired direction more than the spacing between it and the radiator was reduced from the spacing which earlier theoretical considerations would indicate as being optimism. In fact, he found that spacings as close as one eighth wavelength gave maximum results. This value is not critical, however. It was this paper that led Kraus to investigate the possibilities of close spaced arrays for amateur use and the "Flat Top" was the result.

Earth Losses.

The closer spacing is actually more effective in producing a greater field strength in the desired direction (broadside) because it reduces the radiation in the direction at right angles to this (vertically up and down). Now, for amateur work, this is of great importance, because no amateur aerial is erected over a perfect earth and it is usually difficult to erect the aerial sufficiently high above the ground as to make the earth losses negligible. With the winter now with us, the worms in the ground under our antenna would doubtless be grateful for a little extra wàrmth, but it is felt that the average amateur is callous enough to prefer to put a couple of S points on to his signal in some DX country, than to bring warmth and comfort to our fine featherless friends.

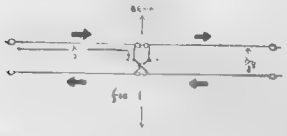
Now with the W8JK beam the **field immediately under the aerial is zero** and no R.F. currents are induced in the earth. The reason for this will be obvious from Fig. 1. This represents a birds or worm's eye view of the aerial. Provided the aerial is a reasonable height above the ground it will be seen that whilst two of the half wave sections will produce a field tending to cause a current tp flow in one direction, the other two will produce an equal and opposite field. For the same reason there is no radiation vertically upward; and therefore no power is wasted in this direction as is the case with most other types of antenna.

Radiation Resistance.

A characteristic of the W8JK beam is that it has a low radiation resistance. Reference to Fig. 1 will show that each end of the aerial is virtually an open wire line with wide spacing. Hence the radiation resistance is low and the currents in the aerial and feeders are high. In the flat top each of the four half waves

takes on quarter of the total power and so the losses are not likely to be high there, but as the feeders carry all the power the current in them (particularly at a voltage node if the feeders are tuned) is likely to be very high, and so, heavy wire should be used.

The low radiation resistance also causes the aerial to tune sharply and therefore if operation is desired at two or more widely differing frequencies in the band, it is preferable to use tuned feeders rather than a quarter wave stub and non-resonant line. With tuned feeders the whole antenna system can be tuned from the station, and provided the line is not over a wavelength or so in



length, the losses in it should be quite small. When tuned for one end of the 14 mc band, the antenna will hardly draw any power at the opposite end of the band until it is retuned. This is with link coupling between the plate tank and feeder terminating tank as shown in Fig. 2. For either series or parallel tuning of the feeders, the split stator condenser may have its moving plates earthed without any effect on the antenna's performance when using this circuit. Furthermore, even if it is not earthed, hand capacity is entirely absent.

Practical Results.

The W8JK beam was tested against a standard "two-half-waves-in-phase" aerial during the last D.J.D.C. Contest. Both aerials were directed on Central Europe and had the same position and height. It was found that approximately the same reports were received from both aerials when the W8JK beam was fed with only one quarter the power used with the "two half-waves in phase" and that when the same power was used with both aerials the beam resulted in the signal being reported on average of two S points louder. It should be mentioned parenthetically that it was not possible to test these two aerials side by side as one was used one week and was then pulled down and the other then put up the following week-end. Conditions over the two week-ends may have played some part, but judged by other participants in the contest the difference was not great.

Another important point is that it was practically impossible to raise American stations (which were off the end of the beam) and even when a few were contacted the best report received wa S4.

Harmonic Operation.

The W8JK beam may be operated on harmonics if tuned feeders are used, but the radiation pattern will not then be the same as for the fundamental. Kraus states that when operated on the second harmonic the radiation pattern has four lobes each at approximately 50 degrees to the wire, that is, a similar pattern to the ordinary full wave zepp. except that the radiation is confined

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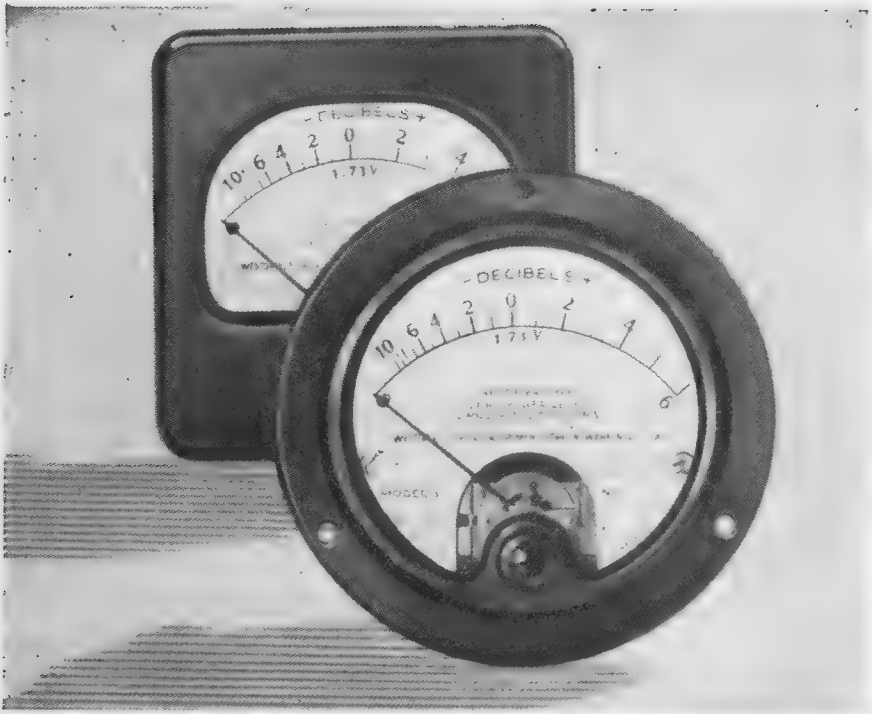

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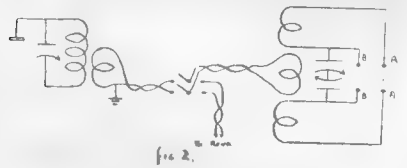
to low angles. The writer disagrees with this. Firstly, from theoretical consideration, it would appear to be incorrect because the aerial operated on its second harmonic consists of what might be termed "two full waves in phase" with a driven reflector. This being the case it will be seen that there are two half waves in phase in the centre of the array with two half waves at the ends which are out of phase. Considering the lines of force around the antenna leads to the conclusion that there would be six lobes in all, two (and possibly the strongest) broadside to the array (same direction as for fundamental operation) and four lobes at between 20 and 50 degrees with the wires.

The writer has not been able to check this with a field strength meter as it is very difficult to measure the field strength from a horizontally



For series tuning feeders connect to AA; for parallel tuning feeder, connect to BB and points AA are jumpered. The feeder terminating tank coil consists of from 6 to 8 turns with 2 turn link coil in centre. Condenser is 25 mmfd. per section.

polarised array with the meter at ground level. Possibly if the meter could be placed, say, one half wavelength above the ground this could be done, but with a vertically polarised array it is a simple matter.

However practical results have shown that the radiation pattern takes the form suggested. It was found that quite good signals could be put into Europe on 28 mc. when the beam was lined up on Europe for 14 mc. operation. This could hardly be expected if the radiation pattern suggested by Kraus, with a null broadside to the array, were correct. Also it was found that good signals could be put down in directions making small angles with the wires in the array. This would make it appear that there are six lobes. It is just possible, however, that the two lobes broadside to the array may actually each be two lobes close together with a very sharp null in the centre, but practical results have not confirmed this, although if the central null were very sharp, it would not be n oticeable. In this event, of course, there would be eight lobes.

Receiving.

The directional characteristics both on the fundamental and second harmonic are just as effective when used for receiving. Actually the same aerial was used for transmitting and receiving, the switching being done by means of a double pole double throw switch connected in the link. By thus switching at a low voltage point it is possible to use a bakelite based switch without introducing losses.

Used for receiving on 14 m.c. with the beam directed on Europe, it was impossible to hear more than a very occasional W signal, and even these were weak.

It is rather interesting to note that both for transmitting and for receiving the effectiveness of the beam for working Europe was more apparent in the early mornings than in the afternoons. This would seem to indicate that when travelling over the shorter route (north-west) the signals follow the great circle route, more or less exactly, but when coming "the long way round" they evidently travel by a number of paths only one of which may follow the great circle. This is also borne out by the fact that it was often possible to hear signals from W 1's and 2's at about 8 a.m. These were evidently travelling "the long way round" over some path that went across Europe, and therefore did not follow the great circle route.

The Four-Lobe Antenna.

Whilst a beam antenna of this type is ideal for working in two opposite directions, it naturally follows that if it is desired to lay down a good fat signal in any particular part of the globe at will, the array must either be made rotatable or else several fixed arrays must be erected. The first method is expensive and involves mechanical problems which are far from simple and the second requires a large amount of space.

Now the study of a great circle map centred on Sydney will show that if a reasonably broad beam could be radiated in a north-west south-east direction and another one in a north-east south-west direction very little of the globe in which amateurs are located in any numbers would be missed. It occurred to the writer that if the W8JK beam were reconnected as shown in Fig. 3 and its directions were changed to run north and south or east and west, this result might be obtained with the added advantage that the radiation would be confined to low angles. The feeders attach to points YY. It will be seen that the wires are not crossed in the centre, but are brought in to an insulator in two v's and one side of the aerial instead of having two half waves in phase now has one full wave. The radiation could be expected to be similar to that of a full wave Zepp, with the exception that the driven reflector which is 180 degrees out of phase would eliminate any radiation vertically upward or downward and confine the radiation to the useful low angles. Also earth losses would be eliminated as before.

Practical Results.

This aerial was tried and gave very good results. Good signals could be transmitted to, and received from, of two the gain due to the directivity is not as high as with a normal W8JK beam directed on any particular country, but this difference was found to average one one S point, and of course one has the advantage of virtual all-round coverage from Europe, North and South America and South Africa. Of course, since the radiator is in four lobes instead the one aerial. Compared with "two-half-waves-in-phase" the "four lobe" aerial put out a better signal in four directions than the former did in two directions.

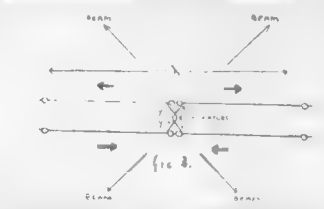


Fig. 3.

Roughly, the results may be summarised as follows: At a given distance the normal W8JK beam put down an S7 signal in two directions, the "two-half-waves-in-phase" put down an S5 signal in two directions and the "four-lobe" aerial put down an S6 signal in four directions.

Harmonic Operation.

The "four-lobe" aerial may be satisfactorily operated on harmonics provided tuned feeders are used. When used on its second harmonic it becomes an "eight-lober" due to the fact that it is virtually a two-wave aerial with a driven two-wave reflector space, in the case, one quarter wave length. The nulls would be quite sharp, and therefore it could be regarded almost as radiating equally in all directions. In spite of this, very good results have been obtained on 28 m.c. Probably this is due to the radiation being confined to low angles and the elimination of earth losses. The antenna has not been tried on 56 mc., but there

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would seem to be no reason why it should not operate satisfactorily. However, the radiation would be equal in all directions although confined to low angles.

Mechanical Details.

As with the normal W8JK beam, the "four lobe' 'aerial requires three spreaders each about one-eighth wavelength long (nine feet is satisfactory for 14 m.c.) These can conveniently consist of bamboo fishing poles. These can be obtained for about ninepence each in the fishing tackle department of some of the larger stores. They come in lengths of up to sixteen feet, but only the thick ends should be used. The centre insulator where the feeders are attached should be supported from the centre bamboo spreader by two more insulators, as otherwise the strain of the feeders will pull the antenna out of shape. There would seem to be no reason, however, why the aerial should not be made as two straight wires one wavelength long, spaced one-eighth wave, and having the feeders attached one in the centre of each wire, after being fanned out in a Y shape. That is, the V pieces could be straightened out and the spacing of the feeders increased over the last few feet, from, say, six inches to the eight or nine feet necessary to attach to the aerial wires.

In any case, the two end spreaders should have rope guys attached to each end so that the whole array can be made horizontal.

As with the normal W8JK beam the aerial may be fed from either end instead of at the centre. A convenient length for the feeder is about 40 feet. This allows series tuning on 28 mc. and parallel tuning on 14 mc.

A possibility that seems to have been overlooked is the use of vertical Kraus beams for 28 and 56 mc. These could be fed from the bottom end instead of the centre, although the wires would still have to be crossed over in the centre. They could easily be hung by a single piece of rope from the top end from, say, another aerial, and could then be easily rotated from the ground. The writer has not yet tried this idea, but it seems to offer an interesting field for experiment.

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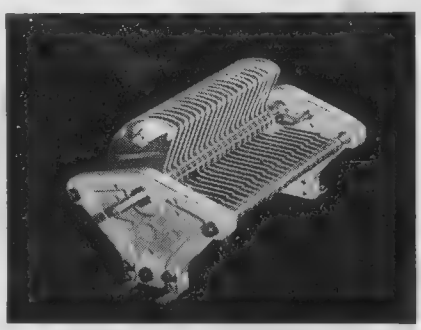

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N.S.W. PERSONALITIES

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2.— VK2UX.
3.—VK2HP.
4.—VK2DR.
5.—VK2PX.
6.—VK2PF.
7.—VK2TI.
8.—VK2WN.

Ray, 2RA (1), is a real old-timer, having obtained his ticket in 1929 when still a schoolboy. Was recently Publicity Officer of the Division, but now looks after the distribution of the Magazine. Has taken his Degree in Engineering and is recognised as one of the coming men in his profession. Spent his early days on the air as Bathurst (ask 2NS). After Wal, 2TI, gave him some advice he began to work. DX hand over fist (?). Considers that he takes an interest in stamp collecting, especially Australian imprint, but 2TI has his doubts. Has great faith in a single 808, but not much faith in 10 mx! Won the Crawford Trophy in 1937 and is now practising for 1939. Look out 2ZK!

Frank, 2UX (2), is the Senior Vice-President, and practically from the time that the A.R.A. was formed in 1932 was its President, and at various times has held every position on the council of the Institute, and Amateur Radio in New South Wales owes quite a lot to him for the manner in which it was reorganised after certain happenings in March, 1932. Is a qualified accountant and company secretary by occupation and in addition to his call, attaches the following hieroglyphics after his name:—A.C.I.A., A.A.I.S., and A.A.A.A. Has been on the air since 1932 and has great faith in a 212D and an antenna of his own design. Frank asks that anyone hearing him recently on 40 mx not to take his frequency as being the high frequency end of the band. Wonder why?

Harold, 2HP (3), is the newly elected Federal President of the Institute and, obtaining his licence in 1929, can be almost called an "old timer." Prior to his election as Federal President, he was for two years President of the New South Wales Division. Under his able guidance the Division has progressed by leaps and bounds and it was through his efforts that the Division was recognised by the State Government during the Sesqui-Centenary Celebrations just concluded, and he was instrumental in obtaining a grant of £100 towards the 1938 VK-ZL Dx Contest. Harold in his own quiet way has helped many a lame dog over a stile and quite a large number of "hams" are grateful to "Honolulu Portugal" for many a friendly tip. At the Annual Dinner of the Institute the title of "Honest Harold" was bestowed upon him—rather facetiously—but to those who know him, no man is more worthy of having that title than 2HP. Spends most of his time knocking over the dx on 20 mx with an 803. "Well, so much for that."

Don, 2DR (4), is our new Secretary and the manner in which he is delving into his work augurs well for the success of the Division in ensuing years. Don has been on the air since 1931 and is proud of the fact that he has had 225 skeds with 5 FM. The line-up at present is a dark secret, but believe the xyl is very keen, so very soon 2DR will be a very consistent station on all bands. Perhaps you remember "Floggo" on 80 mx some time ago.

Harry, 2PX (5), is the Divisional Treasurer and is a real old timer. Despite this fact, still rises about 4.30 a.m. (yes, winter or summer) to work the elusive Europeans. Is a keen Dx man and has worked about 85 countries and 34 zones with QRP. Is reputed to have the ability to obtain blood from stone.

Fred, 2PF (6), our second Vice-President, is almost a newcomer to the locals as prior to 1937 he was located at Cowra and should be quite well known to the country boys. Has been on the air since 1933 and has great faith in a 210. Fred is in the Department of Justice and would like to state that he is not that symbolic, white robed figure that we often see holding a pair of scales in its hand.

Wal, 2TI (7), was secretary of the Division from 1936 till 1938, but was then forced to retire due to pressure of business. Was elected vice-president at General Election in March, and, upon 2HP's election to the Federal Presidency, was elected President of the Division. Spends most of his time on the air with an 804 on 20 mx and a couple of 808's on 10 and 5mx. Is quite well known for his retiring and unassuming disposition and his horror of anything approaching an argument. Oh yeah.

Morris Lusby, 2WN (8), is the new Technical Officer of the Division and is a recent graduate and Honors man of the University of Sydney and VK2 is proud of its B.E. and B.Sc., Member of the Divisional Council. Morry has great faith in a couple of 809's. When the boys see the caricatures on the opposite page possibly they may have something to say to 2WN.

Jim, 2YC, has been QSL Officer for the Division from time immemorial and considers that it is the worst job in the world but despite this fact you could not get him to give it up for all the watts in Bunnerong. Has been one of the Division's most willing workers and staunchest supporters and the country hams' greatest friend. The chemist's shop at Millers Point was always a meeting place for the country ham and many an argument has taken place behind the dispensary at the "Point." Jim handles more QSL cards in N.S.W. than anyone else, but unfortunately many hundreds of South Americans passed through his hands before his came along. Perhaps we should mention the QSL officers' assistant. She is now carrying on whilst Jim is temporarily located at Taree. Hats off to the XYL.

QSL?

From QST we glean the interesting information that qsl cards were originated by D. A. Hoffman, W8FRY.

QSL Bureau

(Ray Jones, VK3RJ, QSL Manager.)

Snowy Harrisson, VK3CN, deplores the use of his call by a pirate. On personal application by the pirate, Snow will hand over cards, a Vigilance blister, and . . . .!

The new QSL Bureau for Hungary has the following QRA:—Kalman Szentpetery, Hazn, Budapest I. Varosmajor-U 23. III., Hungary.

Bill Williams (VK3WE) used his eloquence to such good effect that he persuaded Snow Campbell, VK3MR, to continue on from the Eastern Zone convention at Warragul to Bill's home at Omeo for a few days. When not imitating the mountain goat renowned in fable, Snow was to be heard rolling his R's at Bill's shack.

Cards for the following VK3 stations may be had on demand .(accompanied by 2d.) at the Bureau, 23 Landale street, Box Hill:—AP, BE, BJ, BN, CC, CU, CV, DJ, EA, EC, EI, ES, EW, FK, FM, FT, GB, GJ, GM, GN, GP, GV, HB, HP, IL, IR, JA, JD, KC, KG, KM, KO, KU, KY, LI, MH, NA, NB, NC, NF, OF, OU, PA, PB, PC, PH, PN, PS, QO, QR, SD, SM, SO, ST, TB, TG, TY, TV, UC, UN, US, VB, VK, VM, VX, VY, WH, WP, WR, WW, XA, XE, XD, XR, XU, YA, YG, YR, YS, YT, ZG, ZL, ZX, ZZ, Webb Jones.

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VK2HF

(By VK2VN)

Owned and operated by J. Alan Furze, of Seaforth, a suburb of Sydney, 2HF presents probably the most outstanding station in Australia, and definitely in New South Wales, at the present time.

Seaforth is situated about four miles from the heart of Sydney's noise and bustle, overlooking Middle Harbour, and Alan possesses probably the best location in that district, being approximately 250 feet above sea level with an unobstructed vision in all directions.

Operations were commenced in 1928, and since then every effort has been made by the operator to be the proud but modest possessor of the perfect station.

On approaching the district, one can easily distinguish the two 90-foot masts towering over all and sundry, and to the uninitiated they would appear to be the sky wire supports of a commercial station!

At present there are three separate transmitters complete with their own power supplies built in three standard steel racks. The panels, crackle finished, present a pleasant sight with their rows of meters, knobs and indicator lights (from memory, there are 52 meters in use in the shack). Space will not permit a complete description of the transmitters, but it will suffice to say that for 40 metres, P.P. 830's are used, for 20 metres P.P. 801's, and for 10 and 5 metres, P.P. 35T's. At the time the accompanying photograph was taken, only two transmitters were completed, but since then the 5 and 10 metre rig has been completed, and a fourth is well under way.

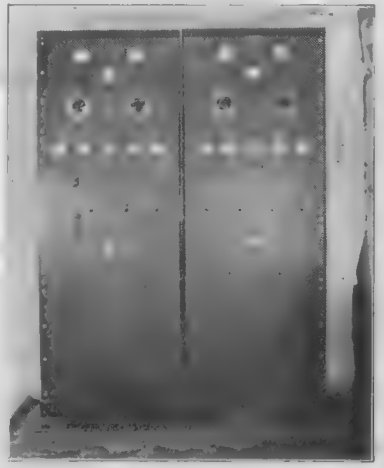
All three are equipped for both telegraphy and telephony, the change being made by the mere throwing of a switch.

Several frequencies are available for each band, selection being made by means of a switch on the panel and retuning of circuits is unnecessary.

Excellent quality speech is obtained from a crystal microphone with conventional amplifier stages, and it is with ease that we recognise the CW sign of VK2HF, a second class commercial operator's certificate being the responsible element.

Whilst speaking of telephony, it might be as well to mention that all transmissions are checked with a Cathode Ray Oscilloscope.

Altogether, there are 85 tubes in use in the shack, of which 65 are in



the transmitters and 22 in the receivers. The 10 metre receiver employs 9 tubes and is fitted with AVC and noise suppression, likewise the 40 and 20 receiver which has the remaining 13 tubes to do the job.

Not satisfied with the array of tubes, transmitters and meters, we strain our necks looking into the sky at the huge black spider web. It would be impossible to describe each antenna as changes are made from day to day, but it is not exaggerating

to say that beams are available for all directions on most bands and they vary from twelve half waves in phase to a single vertical half wave. All manner of feeders find their winding way into the wonder wireless room and terminate in a multiplicity of double pole double throw switches.

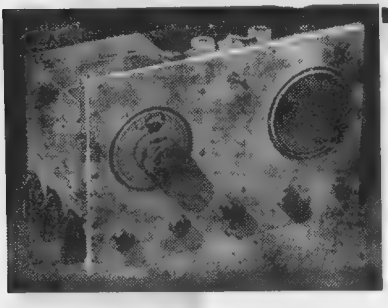
As regards performances, 2HF always appears well to the fore in contests, and was it not for the fact of pressure of work some of the major contests of the world would have no doubt had a different recorded as their winner. However, Alan is eagerly awaiting this year's VK-ZL contest. The DX tally for CW is 98 countries and no less than 68 have been contacted on telephony. Duplex contacts have been made with four continents, and it will not be long before we can talk of a truly remarkable performance, Duplex Telephony WAC.

Another rather unusual performance was the broadcasting simultaneously on 40 and 20 metres of the opening of the 14th Annual Convention by John Logie Baird. A land line from the hall was used, which necessitated special speech equipment and judging by reports the broadcast was well received in all parts.

Congratulations and hats off to VK2HF, New South Wales' premier station.

SILENT KEY.

It is with deep regret that we learn of the death of Mr. Douglas Buchanan, VK2ABT. This is a real loss to Amateur Radio, as he was a fine "ham" imbued with the true Amateur spirit. We take this opportunity to extend our heartfelt sympathy to his relatives.



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Air Raider's Column

Ah, been on the job this time, with the result that I have had to hold back on a few for the celebrities column. Anyway I'll let fly, and trust to luck.

4TY.—Gets the gold medal for the best performance this issue. You see he only called CQ 47 times, (No Bull) before signing. Gosh, I nearly fell to sleep, and you should have heard the language. To cap this off, he ended up raising W2HHF after calling him twenty times—just woke up to the reason for all the CQ's. 4TY is out of the band, get it? Howzat umpire? (Suggest you install a "2HZ CQ machine."

3XG.—Sounds as though he has got a frog in his throat, or is it the pipes of his Xmtr want cleaning?

3KU.—Showing the fone lads that an old timer can keep pace with the best of them, nice sig, OM, and welcome back. 3KU is ex-3BM of the dark ages.

5RW.—Must feed his rig on canary seed, judging by the chirps it emits.

3DE.—is a mystery, one minute he is shoving out a chirpy d.c. note with wobbulation, next minute he is calling his chirpy pal 5RW with a nice T9 sig. (I think you ought to study the code, 0M, 5 is 5 dots, not 4.)

2RQ and 2RH.—Are among the ripples, still holding up the fort for the punk sigs.

5WD.—Keeps some fb fone down in his cellar, and he knows how to use it. Yes, "Old Boy," 4JU does over modulate a wee bit???

3CU.—Say OM, I'd hate to have been 3ZP trying to copy that bug of yours, you're nearly as bad at 3BG when he tries to send fast. A bit more private practice, OM.

3MR.—Going crook about the way I slate the boys, don't worry OM, I'm not a wowser. Anyway your mike sounds as though it wants a box on the "buttons" to shift some of the coke.

6WS.—Has fine fone, but he reminds me of the fellow who went to U.S.A. for a week, and when he came back he could speak the well known nasal twang. Quite a lot of the boys are trying to imitate the W's, better cut it lads, the W's will think you are only another W, then look at the qso's you'll miss.

5BF.—Is another station that pushes out a hefty fone sig. with good quality, a lot of good fone from VK5.

3VY.—Adds a little feedback, and some hum when he comes on fone. Try a little "Lifebuoy Soap" for the hum OM, and for the feedback, turn the receive off before you open the mike. Your speech is as good as any OM.

3EH.—Has a nice hefty hum on his sigs. Shift the mike tranny at a different angle.

4SD.—Has a xtal a.c. note, and is trying to raise dx with some rotten slow sending, guess he must be getting jealous of the VK2's.

2AGU.—Is one of the canaries who whistles into the mike, and watches the pea lamp at the same time. Your fone is a bit on the rough side OM.

3VJ, 3CT, 4GE.—All out of the band on 14 mc, must have been granted commercial station licences, or perhaps they are after U2NE. It looks as though these rubber xtals stretch a long way, except that 3CT has a punk chirpy sig.

4HC.—Has a bubbly xtal note, sounds like a loose wire in the rig, OM.

Well, time marches on. so 73 till next issue,

"AIR RAIDER."

In future all mss. and letters must be signed with the writer's name and address, not necessarily for publication, but as an evidence of good faith.—Ed.

28 and 56 M.C. Notes

(By A. Pritchard, VK3CP.)

Ten meters has been very active with all continents except Europe. It is a few months now since sigs. have been heard from there. Five meters is getting a helping hand with the coming tests. Sunday, 15th May, VK3DH on 5 meters was reayed at 9.45 p.m. through 3ZX on 10 meters and rebroadcast to the States on 20 meters. 3DH used a portable mobile rig 2 tubes osc and mod. with 4 watts input—¼ wave antenna fixed to the car. VK3CZ has his pair of 800's on 5 meters, using the 3rd harmonic tank circuit with good efficiency. A ¾ inch arc from the plate tapping! The antenna has 2½ waves in phase and this xtal controlled outfit should have an excellent chance to get through to the States in the coming 5 mx tests.

VK3JO has completely rebuilt his fb rig for the tests, and will operate from the roof of the Institute. 3JO has included 50 KC tuned IF's in his receiver, the added selectivity showing up the hopelessly unstable modulated oscillators. The 5 mx regenerative doub. will be in operation here at 3CP. The super het has efficiency on 5mx comparable with 10 meters and should receive any weak carriers. Several 20 mx harmonics have been received here on 5 mx, VK3VB being consistently r9 plus. VK3YP is rebuilding his rig into a new 6 ft. rack, all self contained! The 10 mx sigs have been improved as several have efficient rotary beams in operation. 3BQ lost his in the Easter gales and is now using a 3-½ waves zepp. 3XP gets tremendous gain and his sigs rise easily 7r points, from the right-angle position to full on. 3NP has an H type array and evidently the power is going to the States, as locally he has greatly dropped in strength.

The 8JK beam is being tested here at 3CP—mounted vertically from a 50 ft. high cross rope—added height being obtained by folding back 2 feet at the top and bottom. This beam is easily turned and tests with ZL4FK show an increase from point 2 on the RME 69 to point 6 when the beam is correctly aimed. ZL1MQ has excellent quality phone on 10 and has good output on 5. His multi stage transmitter has a 6L6G ECO on 160 mx fed from a separate power supply (appears as steady as xtal) 2,6L6G doub. stages, '210 final on 10 mx or doub. to 5 feeding PP 6L6G on 5. The antenna on 5 has a ½ wave with 2 reflectors and a director. The modulator has a speaker-mike into 3-56's—the latter is a cathode type phase inverter, driving a 53, into 6L6G class ab. He is ready for schedules with VK's.

VK'S 3NW and 3ZD are comparatively new on 10, the latter using a T20 final doubler—a long wire ant. puts out good sigs. From French Indo-China FI8AC has been qso'd here on cw several times and is a new country from 10 meters; his signals peak around 6.30 p.m. during the weekends. W6PDB is often heard R9 when the band is apparently dead. He is using a new type of beam (described in April Radio) having 4 vertical wires on a single pole and pulled out at the centre, giving the shape of a diamond; by the strength of his signals, this beam is evidently something out of the box. VK3XP has had some fb phone qso's with South Africa, the best being with ZE1JR and ZS2AF at 6.30 p.m. Sunday, 8th May; the latter is using 50 watts into a pair of 35 T's and using a diamond with a span of 360 ft. long by 230 ft. wide, need the big open spaces for that job, hi!

There are several 20 mx harmonics on 10—VK6ZO has good strength. On Sunday, 15th May, W6SG was heard at 4.45 p.m., 20 mx harm., changing down to 5 several surging T9 carriers were heard—where from? On Wednesday, 27th April at 5 p.m., SU2TW on cw-rac was heard calling Oceania; his sigs were in the W phone band, so evidently he is new to 10 meters. VK4VJ and 4HR are keeping Queensland on the map. From Sydney 2ADT, 2GU and 2UD supply the States with VK2's. 2GU worker W2INX at midday, 1st May. They were both R9 plus at each end.

DX Notes

(By VK3MR.)

Nothing much doing this month owing to the fact that I have been absent from the state. Say gang, when sending in all the juicy dx, please add the frequency and the time, etc., it will interest others. Interstate representatives also check carefully on the South American and South African stations heard in your states, and let me have them no later than 16th of each month.

Who said qsl? You chaps who are still waiting for a few spare minutes between dx qso's to fill in the W cards that are owing, can well be advised to enter for the matrimonial stakes, as this seems to be the only way out of the hard work keeping check on them. This was very forcibly brought under my eyes while staying at 7AB's during a contest. His wife, apart from feeding him during the long hours, also fills in the log as well as the copy for HQ and also keeps all qsl cards up to date in a very business like style and during the lull between qso's, subconsciously drums 'CQ" on the table in true ham-like fashion. Who owes the most qsl's?

DX.—The most sought after station on 14mc seems to be our old pal W1BES, who is operating at Pitcairn Island under the call of VR6AY. Full details of this interesting station recently appeared in QST VK2KX has now reached 117 countries. Has degenerated to fone in real earnest now and has worked only 12 S. American fones the last week. Using a he man rig, 6L6, 6P6, 807, 808. One unusual qso being TG9AA in Guatemala. VK4RF supplies a long list of stations worked on 14mc which indicates his 45's are doing their stuff. Swears by and at the good old full wave zepp for general dx. So do I Fred. VK3XQ reports that YV5AR has the same punk rx! 2DG reports some rare ones like VGCX. YT7MT. 14410 kc VP7NT. 14400 kc. TF3C. 14390 kc. at 6 a.m. Lotsa good European dx at 5.30 a.m. on. VO6D is active on fone and worked by DG, 14280 kc. Heard here at 6.15 p.m. on 7mc. YV1AD. R5. 4HR, 4EL and 4SD are working all the rare stuff in VK4. Look out for something bigger and brighter next month and get the rig ready for the big contest in October.

All-Amateur Exhibition

The Council of the wireless Institute of Australia (Victorian Division) has decided to hold an Exhibition of Amateur apparatus in the Institute Rooms, Queen street, Melbourne, on Friday and Saturday, 5th and 6th August. The Exhibition will be open from 8 p.m. to 10.30 p.m. on Saturday. A nominal admission fee will be charged, proceeds of which will go towards providing prizes for the winning exhibits in each of the following sections:—

1. —High Frequency Transmitters.
2.—High Frequency Receivers.
3.—Ultra High Frequency Transmitters.
4.—Ultra High Frequency Receivers.
5.—Monitors, Frequency Meters and similar devices.
6.—Other Home Built Amateur Gear.

Practical demonstrations of all types of apparatus are being arranged, together with suitable lectures.

As the success of an exhibition of this nature depends entirely on the efforts of individual members, the Council would like to see a large number of entries in each section. Those desirous of entering gear are advised to get in touch with either VK3MR or VK3OC as soon as possible. Further details will be given in "Amateur Radio" next month.

The organisers of the All-Amateur Exhibition would like to show a selection of really old qsls; prior to 1924 for preference. All care will be taken of the cards and they will be shown where they cannot be "souvenired."

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

D. Reed, Secretary, VK2DR, Box 1734 JJ, G.P.O. Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz, VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton, VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J. Berry, VK2NY, 54 Bacon Street, Grafton.

Zone 4 (Hunter River and Coalfields).—R. W. Best, VK2TY, 57 Hunter Street, Newcastle.

Zone 5 (South Coast and South-West).—R. Ross, VK2IG, 673 David Street, Albury.

(N.S.W. Divisional Council).

Our last month's notes went to press whilst the 14th Federal Convention was still in progress, but as this has already been covered fully there is no need for a further report. The functions in which this Division was concerned were highly successful, and we all enjoyed meeting the delegates and visitors — a fine lot of chaps.

Since the Convention activity seems to have waned a little, a rather natural reaction after all the excitement, but occasionally rumours of new rigs, half-waves in phase, separate transmitters for different bands, etc., seem to indicate that the lads are getting ready for the bigDX Contest in October. It is expected that the rules for this will be available before long.

At the April general meeting, Mr. L. G. Petrie (ZL2OV) described the organisation and work of the Radio Emergency Corps in New Zealand. This body is an offshoot of the N.Z.A.R.T., and has done some very fine work in national emergencies.

Another visitor, Mr. Lowry, ex-VE9AV, also spoke about his experiences in ham radio over the past 25 years, and this proved very interesting.

VK3UH was also present at the meeting.

The Division has been represented at the annual re-union functions of Manly, Waverley and Lakemba Radio Clubs, and also at the 200th general meeting of the latter club. These clubs are doing good work in creating and maintaining interest in amateur radio, and in training prospective applicants for the A.O.C.P. All are staunch supporters of the Institute.

The Division has received four very fine commemorative medallions from the Sesqui-Centenary Celebrations Council. They have been allotted as follows:—W. M. Moore (VK2HZ), Retiring Federal President; H. Peterson (2HP), Retiring State President; W. G. Ryan (2TI), Retiring State Secretary; J. B. Corbin (2YC), QSL Officer.

ZONE 5 NOTES.
(VK2IG)

Wagga hams have the sad duty of recording the passing of 2AEI, Md. Collins, and keen regret is felt all round, as he was very popular. He used to take a special morse lesson at the club 2UO during the week, and was to have been married in about a month's time. A close friend of his is 2AEO, and to Pol and 2AEI'S folk we all extend our sincere sympathy.

2OJ—Is talking of wrecking his antennas again. We guess this will

annoy the neighbours, as they all have a bit of Noel's aerials in their back yards!

2AP—Has located the bother in his outfit and gets R9 from everywhere now. Especially at the locals!

2QE.—Too qrl to be on much, but is hoping.

2EU—Has his super supering O.K. now, and toast crumpets on his speaker fields hi!

2VK—Has proof someone is pirating his call. While out touring he found it chalked across the road. Well! Well!

2IG—Still wasting hours taming his Xmitter, but not too successfully. Hastried every type of osc. known and a lot unknown and none of 'em are any good hi!

2AFD—No news from Angus, so guess he's busy on that rig.

2MP—Is touring VK3 and expects to be about 3 weeks in VIM.

2UO—Going strong again, but AEI is missed.

2YW—Has been heard, but not very often.

2AID—Been working a lot on 40, but is only idling till he gets the 809 perking.

2AEO—Has completed his rig, and by now must be somewhere tween 19 and 85 mx.

2AHO—Is the Narrandera press artist. Asked to cut it up (abbreviate it) and does he? Not bringing his rig down because expects to be back in VIS any day. (Ted is the handle.)

2TQ—Is very quiet lately; what's up, Doc?

2AIB—B for beam is working on 20 and 40 with a beam arrangement for 20, which is very effective. Complains that 20 is not any good any more.

LAKEMBA RADIO CLUB—VK2LR.
(By 2DL)

The 8th annual reunion of the above club held on Tuesday, May 3, at the "Sunrise Hall," Canterbury. The Radio Inspector's Department was represented by Mr. H. K. Burbury, while representatives were present from the W.I.A., both State and Federal, together with representatives from various radio clubs and radio trade. In responding to the

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toast to the Radio Inspector, Mr. Burbury mentioned that the Federal Government was anxious to extend privileges to amateurs, as was indicated by the recent increase in power. He recommended, however, that amateurs should not abuse their privileges, and should treat the bands with the respect to which they were due. Commercial interests were constantly calling for new frequencies, and, furthermore, when television arrives, an even greater pressure will be applied. In conclusion, he stated that he did not think that there existed any deliberate lack of co-operation between amateurs and the department, but advised that money should be spent on improving the quality of signals rather than increasing the power.

Other speakers included Mr. W. Ryan, VK2TI (W.I.M.), Mr. D. G. McIntyre (Prices Radio Service), Mr. C. Hume (Philips Radio), Md. Howarth (A.W. Valve Co.), Mr. R. Priddle, VK2RA (N.S.W. representative of "Amateur Radio") and the various representatives from suburban radio clubs.

The evening was voted by all as a huge success, and the ladies were highly commended on their catering arrangements.

The meeting of May 10th was the 200th general fortnightly meeting of the club, and coincided with the annual election of officers. On this occasion a special representative of the W.I.A., in the person of Mr. Priddle, attended the meeting for the purpose of conveying appropriate congratulations. The following were elected to hold office for the ensuing year:—President, Mr. E. Hodgkins, VK2EH; Vice-President, Mr. J. Warren, VK2QX! Hon. Secretary, Mr. V. Bennett, VK2VA; Treasurer, Mr. H. Ackling, VK2PX; Publicity Manager, Mr. W. Phelps, VK2DL; QSL Manager, Mr. L. Hughes, VK2QP; also a committee of management, technical committee and social committee.

HURSTVILLE AMATEUR RADIO CLUB—VK2MZ.
(Affiliated with W.I.A., N.S.W. Div.)

The club is now in its sixth year, and is progressing favourably, membership being on the increase. It is situated opposite the Hurstville Post Office at 316b Forest Road, which is convenient for those travelling by bus or train. Meetings are held each Thursday night, when lectures are given by Mr. W. Laing (who has a broadcast engineer's certificate). Morse class is in the capable hands of Gib. Calvert. These lectures are being given so as to enable members to reach the standard required for the A.O.C.P.

The club transmitter is at present on 20 mx fone, and consists of a 46 xtal osc., 46 doubler, 46 buffer and a 210 in the final. Speech equipment is a 57 as a triode, resistance coupled to a 56, transformer coupled to a 211. Separate power supplies for each stage. Mike is a Neophone carbon type. Antenna is a ½ wave Zepp. 2VT is at present rebuilding his rig??? 2AHF is QRL at a regional station in the West, but hopes to be back soon. A QSL service is given to transmitting members. A visitor who has joined the club during her stay in Australia is Mrs. Chalk, wife of G3IC.

Requests for information of the club's activities or reports an transmissions may be sent to the Secretary, 34 Park Road, Carlton.

ZERO BEAT RADIO CLUB.
(By VK2ABH)

On the last Friday in May, the club will hold its sixth annual general meeting. This meeting will mark the close of the sixth year of the club's existence. During that time

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the club has had many ups and downs, but we are pleased to say that things have improved considerably this year and look like remaining so.

The country members are well provided for now, as we have the club's transmitter working, and with it supply members with morse practice. This, coupled with the textbook issued free and explanatory notes for same, should go a long way towards making "Every Member a Ham."

Listeners are requested to look for VK2ZB on 7120 Kc's, which is about the middle of the 40 mx band, and report on the transmission to The Chief of Transmitters, care of the club.

Club Gossip.

VK2IQ—Is very busy at present with University studies.

VK2KH—Has taken up fishing and it's not for dx either.

VK2ABH—Building a new receiver, and later intends to construct a 6L6G modulator.

VK2AEE—Uses a grid modulated '46 with 18 watts input to raise Yanks on 20 mx.

VK2AFQ—Informs us that he is about to instal "Beam" tubes for greater signal directivity. He is also doing a lot of portable work, and asks stations to look out for him on 40.

VK2AIY—Is very QRL, but hopes to be on the air soon with a 2A5 E.C. 6L6G and P.P. 10's.

VK2AJO—Had the misfortune to have all the tubes in his transmitter blow out.

VK2AJS—Another new Ham is on the air with a 6L6G Tri-tet, 6L6G doubler and parallel 10's on 40 and 20 mx.

That's the lot for the time being, so, in conclusion, we would like to state that anyone interested in the club can call, write or phone the Seccetary, Zero Beat Radio Club. 38 Sydney Arcade (telephone MA2669.

Waverley Radio Club Notes —— —

Preparations are well in hand for the club's Field Day to be held in National Park on Sunday, 5th June. Parties equipped with portable D.F. Receivers will set out on foot to locate a hidden transmitter, and will also carry with them portable transmitters so that communication can be maintained with the hidden station. There exists at present a large famine of battery valves amongst the Waverley gang.

On Tuesday, 10th May, members witnessed a very interesting demonstration of 16 mm sound film gear, through the courtesy of A.W.A. Ltd., who supplied all the apparatus, even including the projectionist. One of the films shown was "Spanning Space," which illustrated various phases of radio communication, and proved of great interest to all. The evening concluded with the screening of several travelogues.

The club's new transmitter is slowly taking shape due to the efforts of Mr. Wells and Mr. Halley, and will soon be on the air—more QRM.

2AFZ all thrilled to bits with a new Superhet receiver, but when tunes in to Daventry all the neighbours complain of the deafening din —that's how we like 'em, Eric!

2AFG on fone at last and has even gone to the trouble of building up a MONITOR! What next?

2AHJ now risks his life with a 600 volt supply on the final and uses PP 2A5's as modulators, the shack now looking like WLW! Also working some dx on 20 meters between times.

2WN staging a comeback, so BCL's beware!

2FG still disturbing the ionosphere, around Randwick way, but haven't heard that fone yet—what about it Dev?

Victorian Division

H.F. PHONE SECTION NOTES

(VK3ZX)

All the activity for the last few weeks in the H.F. Phone section has been in the preparatory work necessary to run the 5 meter relay tests for May 21st-22nd.

3DH and 3JO and their gang of U.H.F. men have installed special "H" directive arrays on top of W.I.A. rooms in Queen street, the height being well over 100 feet above the street level—the location in Queen street is the highest spot in Melbourne, which should be a good spot for 5 metre DX.

There are 2 50 watt stations supplied by 3DH and 3JO for the test and their installation has kept the boys busy up till 2 a.m. some mornings.

The 10 and 20 metre relay stations have had their share of worries, too —3NP and 3ZX are taking the 5 metre signals and relaying on 10 with 3ZB, 3XD and 3GP taking the 10 metre stations and relaying on 20.

3EN is doing a relay also, on 40 metres.

All other members of the section are helping to put over the test by remaining on the air as much as possible, and asking all DX stations worked to report on the reception of as many relay stations as they can hear, and, if possible, on the 5 metre channel.

3KU has made the job for the key stations easy; that is, 3DH-3JO who will use the call sign—3WI.

3KU has had a record made, which tells the whole story, and also supplies a good deal of ICW on the disk to allow for easy identification.

We have great hopes for the test, and in the near future a repetition will be made with some alterations which will show up no doubt in our first attempt.

KEY SECTION NOTES.

(By VK3HK)

The May meeting was the best attended yet, and the main attraction of the evening was an illustrated lecture by 3ET on his tours of China. And now some notes from the boys.

3DP-OG-BJ-EB.—Playing around on 56 mc.

3VG.—Just installed an 807 in the final.

3SG.—Trying to make time to rebuild. Three stage exciter almost ready—6L6, 807, 807.

3UM.—Still trying to get Jones gainer to "gain," not good enough on local QRM. Will need to instal several xtal gates!!

3QK-VQ-UM-XN-ZX. — Burning midnight oil in 5-way "Around the Suburbs."

3KQ—Entertaining 5JG, QRL!

3ZU—T20 arrived, and now on 14 mc and building 56 mc rig.

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3ZD—Playing around on 14 mc with occasional skeds on 7 mc. Hooked LU7AZ for W.A.C.

3ZY—Asks, do VK6's QSL?

3QS—Pirate using this call, please call around for some QSL cards.

3CN—Call sign being used by a pirate.

3RJ—Active on 14 mc when phone permits.

3DM—Hoping that a few more key click filters will be used by hams around Malvern.

3KI—Last seen on eve of this meeting with heavy YL sked at City Hall. Happy hunting, Johnny.

3YK—Still alive, but like little children is seen but not heard.

U.H.F. SECTION NOTES.

(By 3JO)

56 Mc DX TESTS.

Arrangements Modified.

Results of these tests were received too late for publication in this issuefl However, in view of the widespread interest created by them it will be interesting to outline the modified arrangements. After the first flurry of excitement over the original scheme had died down, it was soon apparent that this arrangement presented too many difficulties to be overcome in the time allowed, and it was therefore decided to operate both 56 mc transmitters from the W.I A. rooms, and the co-operating stations on 28 and 14 mcs to operate at their home locations.

Saturday afternoon, 14th May, saw a buzz of activity on the roof of the W.I.A. rooms, where the various beams were erected. Our meeting of 17th May presented a unique episode in the history of the section, for here were to be found the various members struggling with wires and other pieces or junk or equipment in an effort to have a full dress rehearsal of the tests of the following weekend.

Some difficulties were experienced during these tests, but by sticking to the job everything was in order for zero hour on Saturday, May 21st. 3DH, 3ZX and 3ZP carried out a successful test on Sunday, 15th May, when the rebroadcast of 3DH by 3ZX and 3ZP was well received in U.S.A.

Owing to the work necessary to have the gear in operation on time, these notes have been curtailed, but don't forget this month's meeting on Tuesday, 21st.

COUNTRY SECTION.

(VK3UK)

The Warragul Convention reported under the Eastern Zone Notes was a great success, and has given a grand start to the zone. With two such active and enthusiastic members as 3WE and 3PR, the new president and secretary, the zone should look forward a most successful year.

In addition to the Western Zone Convention yet to be held, it is possible that a convention will be held at some northern town such as Shepparton for the benefit of men who have not been able to attend any to date. Probably it will be held fairly late in the year so that the country functions may be evenly spread out.

NORTHERN ZONE.

(By 3HX)

Conditions on all bands show improvement. Dx is coming through on 20 Mx, while on 40 the skip is lengthening; on 80 the usual summer static is clearing up and the ZL's and an occasional W can be heard.

3OR is active on 40 and 80 mx, and has tried doubling in the final to 20 mx; recently had a YL jnr. op. presented to him. Congratters Murray.

3EP—Active on 20, 40 and 80; works a few Yanks on 20 Cw now and again.

3TL—Also active on all bands. Treb contacted the Pitcairn Island station VR6AY.

3ZK—Seems more interested in the new gear at 3SH, or at least so he tells us. However, Jim is active mostly on 80 mx.

3IH—Does a little on 40 and 80. The YL op. May is becoming widely known by her activity.

3WN—Puts in an appearance occasionaly on Sunday morning skeds.

3HR—Heard on 40 bx.

3CE—Is having trouble with his house lighting batteries, but is on 80 mx now and again. Roy is waiting for the rain.

3NN—Is another who is not very active; evidently Herb is rather QRL.

3DW—Is heard occasionally on Sunday skeds. Believe Doug is active on 20 mx.

3DU-TC—Mostly on 80 mx with QRP rig, and puts out a decent sig from low power.

3EC—Ern is active on 40 and 80 mx.

7RC—Is one of the ops at 3CV Charlton and is kept busy.

3BM—Is a very busy little boy. Has the sole management of half a dozen farms, and besides spends a fair amount of time in Kerang. Has put up a 95-foot stick.

3EF.—Is still on 40 mx; has the misfortunte to have trouble with his modulators, but Bert soon fixed that.

3HX—Has been very QRL; sorry QRL for some time, so has not been very active.

WESTERN ZONE.
(By VK3HG)

Stations in this zone interested in forming a weekly district hook-up similar to that of the Northern Zone please advise their zone officer. Some such system is necessary so that we can co-operate more readily and exchange news of the new's activities. 7mc. seems to be the more popular band in this locality, although 3.5mc. is more suitable for such a hook-up.

3TW—Still very active on 40 and 20. Reported to be importing a National receiver.

3NQ—Heard CQing one evening on 80. Why not keep it up, Jim?

3PE—Has excellent phone on 20.

3OW—A little more active lately, mostly on 20.

3HG—On higher power again with new genemotor and doing quite well in spite of being handicapped with an inefficient antenna.

EASTERN ZONE CONVENTION.

The Eastern Zone Convention held at Warragul on 14th-15th May was a great success. About 30 city and country Hams attended, and from the reports everybody thoroughly enjoyed themselves. After an excellent dinner and toasts of the W.I.A. and Eastern Zone, the office-bearers were elected. VK3WE was elected president, VK3PR secretary, and 3DG-3PR notes correspondents.

The following items were listed for discussion:—U.H.F. work, B.C. station harmonics, recordings on amateur bands, duty on experimental radio gear not made in Australia, an all-V.K. fone contest, and the Vigilance Committee. With all those items to discuss the evening went very quickly, and at 11.30 p.m. when we had to QRT there was still plenty to talk about.

On the Sunday morning a visit of inspection to the local "B" class station, 3UL, was made. This station impressed all the visitors for its neatness and efficiency, and for the fact that it was designed and built by Hams.

So ended a most enjoyable week-end, and everybody is looking forward to the one next year.

Members' Doings.

3BR—Jack is missing, boys; reports of whereabouts required.

3DG—On 80 mx fone and putting out a hefty sig. QRO?

3IL—Heard occasionally on 40 mx fone.

3GO—On 40 mx fone. We are looking for you on 80 mx. How about it, Graham?

3EG—Very QRL, so we hear from our despatch rider, Mac.

3LY-3EA—Ron and Eric have both been on holidays. Hope to hear you chaps soon.

3SS—Keith going into the Radio Service game. Hope it doesn't keep you off the air.

3QB—Jack is in the midst of shifting shack, but finds time to QSO W's.

3XH—Stan rebuilding modulator and will be on again very soon.

3JE—Bill has taken to fishing.

3DI—Rebuilding rig for A.C. Hurry up, Jim.

3WE—Bill rebuilding, using 809's in P.P. It's going to look like a real commercial job.

3PR—Hoping to make some alterations to rig and building better modulator.

3MR—Snow wants to see his call in these notes as he is staying with 3WE, and reckons he is in the zone. Hi, hi!

73. 3DG-3PR.

CONVENTION QUERY.

Somebody wants to know why Bob 3ML, when asked at the convention to get hold of half a dozen glasses (empty) came back with half a dozen live marines. Hi, hi!

Queensland Division

GENERAL MEETING.

The last general meeting of the Institute was held on Friday, 5th May, at Celtic Chambers, George street, and was fairly well attended.

4MA brought up the subject of the re-establishment of 4WI and the advisability of an Institute headquarters' station for the dissemination of news to city members and morse code instruction to students studying for the Amateur Transmitter's Ticket. After much discussion it was decided that the Institute Council submit proposals at the next General Meeting for reopening 4WI and running a weekly service from the station.

4RT outlined the extensive arrangements and new methods of instruction which had been adopted for coaching students desirous of obtaining the Amateur Operator's Proficiency ertificate. It was pointed out that a new class had just started and those anxious to take the course would be well advised to enrol within the next week or so. Full particulars of this were obtainable at the Wireless Institute Rooms, Celtic Chambers, George street, between 1 p.m. and 2 p.m. on Mondays, Wednesdays and Fridays.

COUNTRY MEMBERS ACTIVE.

4CG, Cliff Gold, of Toowoomba, seems to be very active. His last batch of QSL cards included acknowledgements to stations in no less than 20 different countries.

A newcomer to the game is 4ZP of Yarra, via Maryborough. The transmitter consists of 6p6 tritet with 6p6 amplifier and the input is 18 watts, power being obtained from a genemotor. An Ultra Gainer with separate beat oscillator takes care of reception. A 132 Zepp aerial with 45 foot feeder is in use at present.

4HD, E.S.&A. Bank, Nambour, has just completed an 89 E.C. oscillator and 6p6 amplifier. The input power used is 20 watts.

Warwick has a new amateur in 4CW. The signals emanate from a 47 oscillator, 46 doubler and a push pull 46 final which runs around 22 watts input, power being derived from D.C. mains.

The station of 4XO, Bundaberg, is in the evolutionary stage as yet. A 42 Hartley oscillator with a ten watt 46 push pull final is at present being used. However, building operations are well under way and a ten valve superhet receiver and a three stage crystal rig should be the result.

4DK, a new Institute member located at Winton, is looking for contacts with Brisbane amateurs.

4DU, Crawford, Kingaroy Line, is another newcomer. The rig consists of 89 electron coupled oscillator link coupled to an end fed Zepp aeiral. 40 meters is the band used and input power is only 2 watts. Don't overlook his CQ's, members.

GOOD DX BY LOCAL AMATEURS.

At 4 p.m. on Thursday, 5th May, 4RY contacted African ZEIJJ on ten meters. This outstanding contact made Bill, W.B.E. on the 28 m.c. band.

4SD reports good conditions on 20 meters. Two new countries worked are VO and VP7.

4LP hopes to be on the air shortly at a new Q.R.A. The final will feature an 807 valve.

The line up at 4HU's is 53 oscillator,doubler, 2A3 and 210 final. The band favoured at the moment is 40 meters.

Since his return from VIS, 4RT has been active almost nightly on 20 meters.

4XW is fairly active on 40 meters with both C.W. and fone. What about trying the DX on the higher frequencies?

4PX is inactive due to blown filter condensers. The rig uses 6L6, 6L6 and 210 final.

4CX is contemplating the addition of an 807 to his present rig which consists of 53 oscillator-doubler followed by a 6L6.

The institute's enthusiastic morse code instructor, 4MA, is in the process of rebuilding the new transmitter. It promises to be 6A6, 59 and 809. 4MA is eagerly awaiting a new 20 meter crystal.

4WX has only been on the air a few weeks. He has made a good start using an 89 E.C. oscillator, but this will soon be replaced with a crystal rig using 89's in a push pull final.

4AN who has been QRL for some months hopes to be active again in 6 or 7 weeks.

South Australian Division

(By VK5KL)

The following comprise the council for the next 12 months and officers of the various sections:—Mr. J. Kilgariff, president; Mr. A. Reiman, secretary; Mr. L. Pearn, vice-president;

assistant secretary and country members' representative, Mr. W. Walker; vice-president; Mr. E. Barbier treasurer, Mr. F. Bourne QSL officer; Mr. C. Castle publicity and traffic manager, Mr. C. Cheel, Mr. Luxton and Mr. McAllister complete the council.

Transmitters Section.

At the last meeting Mr. W. Walker (5WW) was elected chairman, Mr. F. Bourne secretary, and Mr. W. Lloyd assistant secretary. During the evening Mr. O'Grady delivered an excellent talk on "Recent Development in Communication Engineering." This was intensely interesting and was well applauded when concluded.

QSL Bureau.

Special note should be taken that all QSL matter should now be addressed to QSL Officer, Box 284D, G.P.O., Adelaide.

General.

On June 13th (a public holiday) the institute has been asked to again co-operate with the Outboard Motorboat Club at Mannam for further timing of the speed trials.

Two new members admitted to the Institute are Mr. Patterson, 5XR, of Narracoorte, and Mr. Leister, 5LR, of Berri.

BARKER ZONE.

Conditions have been slowly improving on the 40 mx and 20 mx bands. Several good DX stations have been heard on 20 mx about 4 p.m. at week-ends, and on 40 mx in the evenings. Fone on 40 mx, however, is very erratic.

VK5BF.—Fone very consistent on 40 mx. Hopes to do big things on 5 mx with a pair af 807's in the final stage.

5XR.—Now a member of the W.I.A. Has been rebuilding lately in anticipation of A.C. mains power.

5BG.—Puts out a very R9 fone signal, clear and well modulated.

5GW.—Getting near the mark now, only one more stick to put up, and then we should hear something.

5CJ.—Now on fone and looking farward to some interesting QSO's.

WAKEFIELD ZONE.

(By VK5RE.)

VK5LR.—Had fb QSO with Jack a few days ago and a very fine sig. Jack puts out too. He advises that the directional antenna urge is beginning to make itself felt. So it looks like a beam for 5LR. Jack is now a member of the W.I.A.

VK5IV.—Roy has now gone to VK4 and is operating under the call VK4IV.

VK5BF.—Frank still tickles the ears with a splendid fone rig. and he is anxiously awaiting the big 5 meters' field day, when he hopes to make 5 meter history. Good luck, old boy, and hope you get through to England.

Wakefield Zone welcomes two new W.I.A. members in Mr. Ron Green and Mr. Harold Fisher, two good scouts and a definite acquisition to Amateur Radio.

VK5RE.—Breathes a sigh of relief. The fruit season is through at last; a visit to the city is contemplated. Then back to Renmark with pockets full of new tubes, meters, etc., to settle down to some real radio activity. Will tell you more about it next month.

GREY ZONE.

(By VK5WG.)

Conditions in this zone are fairly good on all bands; static has deserted 80 meters and quite a number of zone members are up there. Some dope on zone members:—

5FB.—Frank was successful in obtaining his first class commercial ticket recently. Congrats, OM.!

5LG.—Leith is still among the DX on 20 mx and is contemplating 80 mx.

5WG.—Experimenting on 5 mx.

5AT.—Bert is nibbling at 5 mx.

5BK.—Jack is active again and will soon be on 80 mx.

5TL.—Tom is getting out well with battery power.

5YM.—Norm. is now at B Class Station 5PI.

5KJ.—George Connor, Booleroo Centre. One of the regulars on 80 mx, with a very good signal.

Our student members, Mr. Col. Bottrall and Mr. Frank Trembath report good progress; we wish you luck, OM's.

Tasmanian Division

(VK7ZL.)

The last monthly meeting, held on 3rd May, went with a swing. President 7AH, better known as "Pop," shamed the younged members of this

(Continued on Cover 3.)

Hamads

Advertising space in these columns is available to those wishing to sell, buy or exchange, at 3d. per line; approximately five words to the line. Minimum charge, 1/-. To ensure insertion enclose postal note or stamps with copy, and address to the Advertising Manager, "Amateur Radio," White Horse Road, Box Hill, E.11., Victoria.

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(Continued from page 32.)

division in the matter of punctuality. Methinks it would be a good idea to make the meeting time 7.30 p.m., then maybe those red souls may arrive by the scheduled hour of 8 p.m. (Incidentally, 4UX made a statement to the effect that 4PH was the oldest member of the W.I.A., but I think we can claim that honour as 'Pop," 7AH, has been dabbling in ham radio since 1901 and is 71 years of age.)

To conclude the meeting 7JB gave an account of his doings in VK2 at the recent convention and also a brief review of the items of the agenda as accepted.

7KV.—With the hon. secretary visited the northern end of the island to discuss certain matters concerning the institute in the North.

7CT.—Very much overworked. Unable to attend last meeting as had to work back at office. What a feeble excuse Terry.

7JB.—Suggests that 3MR approach local council with view to running a trolly bus to his QRA for the benefit of visiting hams.

7RK.—Too busy rebuilding to remember to scratch a few lines about doings of the northern gang.

7AB.—Surprised and no doubt gratified to find himself the possessor of a cup for winning the limited section of the VK/ZL fone contest. Beware of Southern members in the next contest, Doug.!

7BQ.—To be made chairman of the North Zone we believe—a most popular decision.

7QZ, 7LZ, and 7LG.—No news, but we hope to see you all at the dinner.

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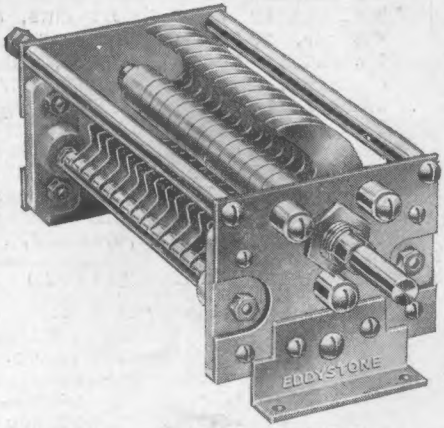

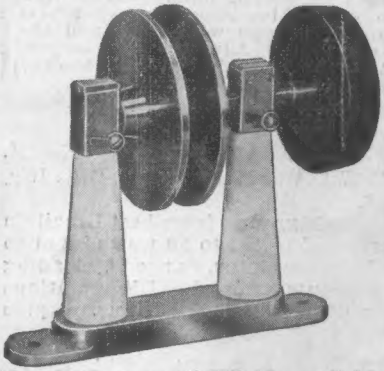

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